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EXAMINER

MEW, KEVIN D

ART UNIT	PAPER NUMBER
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2664

DATE MAILED: 03/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/659,900

Applicant(s)

PARK ET AL.

Examiner

Kevin Mew

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/13/2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,9-13,18-20,25-27 and 31-33 is/are rejected.
- 7) ☒ Claim(s) 2-8,14-17,21-24,28-30,34-37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5,6,7.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Detailed Action

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: reference numerals 112, 113, 114. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. **Claim 3** is objected to because of the following informalities: the word “synchronous” in the recitation of “synchronous mobile station” in line 10 of the claim should be “asynchronous” instead in order to be consistent with the recitation of “asynchronous mobile station” in line 3 of the claim. The word “synchronous” should be replaced with “asynchronous.”

3. **Claim 9** is objected to because of the following informalities: there is a repeated recitation of the limitation “an asynchronous radio network includes” in line 7 of the claim. The second phrase of “an asynchronous radio network includes” should be removed from the claim.

4. **Claims 12, 19, 26, 32** are objected to because of the following informalities: the recitation of the word “et al.” in line 4 of claim 12, line 4 of claim 19, line 7 of claim 26, and line 4 of claim 32, respectively. The word “et al.” should be removed from each of these claims.

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5. **Claim 14** is objected to because of the following informalities: the recitation of the word "base" in line 8 of the claim should be read as "based". The word "base" should be replaced with "based."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art "Introduction to GSM" (XP-002199834) in view of Lupien et al. (US Patent 6,463,055).

Regarding claim 1, the admitted prior art discloses a method for processing a call in an asynchronous mobile communication system (**a method to establish a call connection over the radio interface in a GSM network**, see lines 1-3, section 7.4, paragraph 1, page 172), wherein an asynchronous mobile station (**mobile station**, section 7.4, paragraph 1, page 172) includes a call control (CC) entity (**call control or CM entity**, see line 5, section 7.4, paragraph 2, page 172), a mobility management (MM) entity (**MM connections**, see lines 9, paragraph 2, page 172) and a radio resource controller (RRC) (**BSC**, see line 6, paragraph 2, page 172); an asynchronous radio network includes a radio resource controller (RRC) (**BSC**, see line 6, paragraph 2, page 172), the method comprising the steps of:

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- a) setting up the call in case a calling call message is generated in the mobile station (**mobile-originated call setup**, see lines 11-12, section 7.4, paragraph 1, page 172);
- b) establishing a channel between the asynchronous mobile station and the asynchronous radio network (**mobile station starts with the transmission of a channel request message**, see line 1, section 7.4, paragraph 2, page 172);
- c) handling basic information for assigning a radio resource (**the necessary RR connections are established by the authentication request and response**, see lines 9-10, section 7.4, paragraph 2, page 172);
- d) performing a cipher establishment (**the subsequent RR procedure sets the cipher mode service**, see lines 9-11, section 7.4, paragraph 2, page 172);
- e) establishing the radio resource (**the necessary RR connections are established by the authentication procedure**, see lines 9-10, section 7.4, paragraph 2, page 172);;
- f) performing a configuration for a service (**the mobile station transmits setup message indicating the type of service it requires from the CM entity**, see line 5, page 173, and line 1, page 174); and
- g) transmitting a phone call stand-by message to a user (**assignment command is sent back to the mobile station**, see line 5, page 174).

The admitted prior art does not explicitly show that core network is synchronous. However, Lupien discloses an integrated radio communications network and method in which integrates an ANSI-41 circuit switched network (**synchronous core network**) and a GPRS packet data network (asynchronous network, see lines 26-31, col. 1 and lines 35-

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40, col. 3), including a mobile station that operates in both the ANSI-41 network and the GPRS network (see lines 38-40, col. 3) and an interworking GPRS base station controller that supports both ANSI-136 operations and GPRS operations (see lines 48-51, col. 3). Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to modify the switching core network of the admitted prior art with that of Lupien such that the switching core network supports both asynchronous and synchronous communications such as the switching core network taught by Lupien. The motivation to do so is to enable mobile stations to access both the ANSI-41 voice/circuit-switched and GPRS packet data network services, and to optimally utilize the circuit-switched resources over the ANSI-41 network because simultaneous circuit switched voice and packet data services is then provided while connected through a circuit-switched connection to the Internet.

7. **Claims 9, 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art "Introduction to GSM" (XP-002199834) in view of Lupien, and in further view of the admitted prior art "Subscriber Signalling Gateway between CDMA Mobile Station and GSM Mobile Switching Center" (XP 002031666).

Regarding claim 9, the admitted prior art (XP-002199834) and Lupien disclose all the aspects of the claimed invention set forth in the rejection of claim 1 above. In addition, the admitted prior art (XP-002199834) discloses a call clear step of:

f) transmitting a connection release message for informing that a Layer-3 signaling and a radio resource for a common use should be released, to the asynchronous mobile station (**transmission of the channel release message to the mobile station**

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after which the Layer 3 connection is terminated, see line 5, paragraph 2, page 174 and Fig. 7.4);

However, the admitted prior art (XP-002199834) and Lupien do not disclose a method for processing a call clear initiated by the asynchronous mobile station.

However, the admitted prior art (XP 002031666) discloses a sequence diagram for initiating a call clear from a mobile station (see Fig. 12(a)), comprising the steps of:

a) transmitting a message requesting that a radio resource and a wire resource need to be released, from the asynchronous mobile station to the asynchronous radio network (**send release order message from the mobile station to the base station**, see Fig. 12(a));

b) transmitting a call clear request message from the asynchronous radio network to the synchronous core network (**send disconnect message from the mobile station to the base station**, see Fig. 12(a));

c) transmitting a radio resource release message from the asynchronous radio network to the asynchronous mobile station, after receiving a command of a resource release from the synchronous core network (**send release acknowledgement message from the MSC to the base station and then a release order acknowledgement message from the base station to the mobile station**, see Fig. 12(a));

g) after at the asynchronous mobile station, releasing the Layer-3 signaling and the radio resource for the common use, transmitting a clear complete message for informing that all radio resources and signaling between the asynchronous mobile station were released, from the asynchronous radio network to the synchronous core network (**send release complete message from the base station to the MSC**, see Fig. 12(a)).

The aforementioned admitted prior arts do not explicitly disclose the following two steps in the call clear procedure initiated by the mobile station:

d) at the asynchronous mobile station, releasing a radio resource for an exclusive use;

e) transmitting a radio resource release completion message for informing that the release of the radio resource for the exclusive use was completed, to the asynchronous radio network;

However, it is well known in the art teaching that after receiving a radio resource release message at the asynchronous mobile station from the asynchronous radio network, the exclusive radio resources dedicated to the mobile station would be released at the mobile station and a radio resource release complete notification message would be transmitted from the mobile station to notify to the radio network that the radio resources release is complete before the radio network would start performing the Layer 3 connection termination.

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to combine the call clear procedure steps of the admitted prior art (XP-002199834) with the call clear procedure steps of the admitted prior art (XP 002031666). The motivation to do so is to demonstrate all the sequence steps involved to process a call clear procedure initiated by the mobile station because the call clear procedure is not complete unless the mobile station is shown to transmit a request message to the radio network and then to the core network when requesting for call clear processing, and to receive acknowledgement message from the core network to the radio network and then from the radio network to the mobile station.

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Regarding claim 10, the admitted prior art (XP-002199834) and Lupien disclose all the aspects of the claimed invention set forth in the rejection of claim 1 above. The admitted prior art (XP-002199834) further discloses a method for processing a call clear initiated by a core network (**call disconnect processing initiated by the network**, see lines 1-3, paragraph 2, page 174 and Fig. 12 (b)), comprising the steps of:

a) transmitting a radio resource release message from the asynchronous radio network to the asynchronous mobile station, after receiving a command of the resource release (**call release procedure**) from the synchronous core network (**the network will initiate a call release procedure by sending a disconnect message from the network to the mobile station**, see lines 1-3, paragraph 2, page 174 and Fig. 7.4);

b) at the asynchronous mobile station, releasing a radio resource for an exclusive use, after receiving the radio resource release message from the asynchronous radio network (**release message is sent from the mobile station to the network**, see lines 3-4, paragraph 2, page 174 and Fig. 7.4);

c) transmitting a radio resource release completion message for informing that the release of the radio resource for the exclusive use was completed, from the asynchronous mobile station to the asynchronous radio network (**the network acknowledges to the mobile station the release message with a release complete message**, see lines 4-5, paragraph 2, page 174 and Fig. 7.4);

d) transmitting a connection release message for informing that a Layer-3 signaling and a radio resource for a common use should be released, to the asynchronous mobile station (**transmission of the channel release message to the mobile station**

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after which the Layer 3 connection is terminated, see line 5, paragraph 2, page 174 and Fig. 7.4);

The admitted prior art (XP-002199834) and Lupien do not explicitly show that after at the asynchronous mobile station releasing the Layer-3 signaling and the radio resource for the common use, transmitting a clear complete message for informing that all radio resources and signaling between the asynchronous mobile station were released, from the asynchronous radio network to the synchronous core network. However, the admitted prior art (XP 002031666) discloses a call clear sequence diagram where a release message (clear complete message is released) is sent from the base station (radio network) to the MSC of a GSM network (see Fig. 12 (b)). It is well known in the art teaching that the call clear complete message would be sent from the radio network to the MSC in order to notify the core network about the completion of the call clear procedure. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to modify the switching core network of the admitted prior art and Lupien such that the a clear complete message would be sent from the asynchronous radio network to the synchronous core switching network such as the teaching of the release notification message sent from the base station to the MSC by the admitted prior art discloses (XP 002031666). The motivation to do so is to release the radio resources for the requesting call clear connection being monitored by the MSC in the core network because the release of the radio resources could then be reallocated by the MSC to other call connections.

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8. **Claims 11-13, 18-20, 25-27, 31-33** are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Gilhousen et al. (US Patent 5,697,055), in view of Lupien.

Regarding claims 11, 18, 25 & 31, Gilhousen discloses a cellular mobile communications network (see Fig. 1) for processing a handoff (**mobile station handoff may be initiated**, see line 30, col. 7), comprising the steps of:

a) determining to handoff (**mobile assist handoff may be initiated by the mobile station**, see lines 30-31, col. 7 and Fig. 1);

b) selecting the target asynchronous radio network for the handoff (mobile station transmits (**mobile station is equipped with a search receiver which is used to scan the pilot signal transmission of neighboring base stations**, see 31-33, col. 7 and Fig. 1);

c) in response to a handoff request, providing information related to the handoff, thereby completing a preparation for the handoff (**if the pilot signal of the neighboring base stations is found to be stronger than the current base station, mobile station communicates information such as the signal strength via the base stations to the MSC**, see lines 37-44, col. 7);

d) establishing a connection between the asynchronous mobile station and the target asynchronous radio network, thereby completing the handoff (**MSC initiates connections between the mobile and base stations upon receiving the information**, see lines 44-47, col. 7); and

e) disconnecting the communication between the asynchronous mobile station and the source asynchronous radio network (**MSC tears down connections between the mobile and base stations upon receiving the information**, see lines 44-47, col. 7).

Gilhousen does not explicitly disclose whether the mobile communications network whether the mobile stations, the base stations, and the MSC are synchronous or asynchronous. However, Lupien discloses an integrated radio communications network and method, which integrates an ANSI-41 circuit switched network (**synchronous core network**) and a GPRS packet data network (**asynchronous core network**, see lines 26-31, col. 1 and lines 35-40, col. 3; note that GPRS protocol architecture includes Radio **Resource (RR) Management, Mobility Management (MM), and Connection Management (CM)**), including a mobile station that operates in both the ANSI-41 network and the GPRS network (see lines 38-40, col. 3) and an interworking GPRS base station controller that supports both ANSI-136 operations and GPRS operations (see lines 48-51, col. 3).

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to modify the mobile communications network of Gilhousen with that of Lupien such that the switching core network, base stations, and mobile stations all support both asynchronous and synchronous communications mode such as the interworking mobile radio communications network and method which integrates both an ANSI-41 circuit switched network (**synchronous core network**) and a GPRS packet data network (**asynchronous core network**, see lines 26-31, col. 1 and lines 35-40, col. 3), as taught by Lupien. The motivation to do so is to enable synchronous/asynchronous mobile stations to access both the ANSI-41 voice/circuit-switched and GPRS packet data network services via the synchronous/asynchronous base stations, and to optimally utilize the circuit-switched resources over the ANSI-41 network because simultaneous circuit

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switched voice and packet data services is then be provided while connected through a circuit-switched connection to the Internet.

Regarding claims 12, 19, 32, Gilhousen discloses all the aspects of the claimed invention set forth in the rejection of claims 11, 18, 31, respectively, above. Gilhousen further discloses that step a) includes the steps of

a1) at the asynchronous mobile station, measuring a power and a performance of a radio link, based on information related to a radio link measurement received from the source asynchronous radio network (**an interactive process between the mobile station and the base station permits the mobile station to identify and measure the signal strength of the pilot signal which it receives**, see lines 37-42, col. 7);

a2) transmitting a radio link measurement report message to the source asynchronous radio network (**pilot signal transmission of neighboring base stations**, see lines 32-33, col. 7); and

a3) at the source asynchronous radio network, determining whether the handoff is allowed, based on the radio link measurement report message (**if the pilot signal of the neighboring base stations is found to be stronger than the current base station, mobile station communicates information such as the signal strength via the base stations to the MSC**, see lines 37-44, col. 7).

Regarding claim 26, Gilhousen discloses all the aspects of the claimed invention set forth in the rejection of claim 25 above. Gilhousen further discloses that step a) includes the steps of:

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a1) transmitting a message for requesting to measure a neighboring radio link, from the source synchronous radio network to the synchronous mobile station (**mobile station is equipped with a search receiver which is used to scan the pilot signal transmission of neighboring base stations**, see 31-33, col. 7 and Fig. 1);

a2) at the asynchronous mobile station, measuring a power and a performance of a radio link, based on information related to a radio link measurement received from the source asynchronous radio network (**an interactive process between the mobile station and the base station permits the mobile station to identify and measure the signal strength of the pilot signal which it receives**, see lines 37-42, col. 7);

a3) transmitting a neighboring radio link measurement message to the source asynchronous radio network (**pilot signal transmission of neighboring base stations**, see lines 32-33, col. 7); and

a4) at the source asynchronous radio network, determining whether the handoff is allowed, based on the neighboring radio link measurement message (**if the pilot signal of the neighboring base stations is found to be stronger than the current base station, mobile station communicates information such as the signal strength via the base stations to the MSC**, see lines 37-44, col. 7).

Regarding claims 13, 20, 27, 33, Gilhousen discloses all the aspects of the claimed invention set forth in the rejection of claims 12, 19, 26, 32, respectively, above. Gilhousen further discloses that step b) includes the steps of:

b1) transmitting a handoff required message to the synchronous core network, if it is determined to handoff (**the signal strength information is communicated via base**

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stations(s) to which the mobile station is communicating through to the MSC, see lines 42-44, col. 7); and

b2) at the synchronous core network, grasping information about the target asynchronous radio network by analyzing the handoff required message (**MSC initiates connections between the mobile and base stations upon receiving the information,** see lines 44-47, col. 7).

Allowable Subject Matter

Claims 2-8, 14-17, 21-24, 28-30, 34-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 2, the method as recited in claim 3, wherein the step a) includes the steps of: a1) transmitting the calling call message generated in the CC entity of the asynchronous mobile station, to the RRC of the asynchronous mobile station; a2) requesting the RRC of the asynchronous radio network of a connection, through a common control channel (CCCH); and a3) transmitting a connection completion message and information of a dedicated control channel (DCCH), through the CCCH, to the asynchronous mobile station, after receiving the request of the connection.

Regarding claims 14, the step c) includes the steps of c1): at the synchronous core network, transmitting a handoff request message to the target asynchronous radio network; c2) at the target asynchronous radio network, analyzing and storing information

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about the source asynchronous radio network and the asynchronous mobile station, based on the handoff request message; c3) transmitting a handoff request acknowledgement message from the target asynchronous radio network to the synchronous core network, transmitting a handoff command message from the synchronous core network to the source asynchronous radio network, and transmitting a physical channel reconfiguration RRC message from the source asynchronous radio network to the asynchronous mobile station; c4) transmitting a message for informing that the mobile station is prepared for the handoff, from the asynchronous mobile station to the source asynchronous radio network; and c5) transmitting a handoff commenced message from the source asynchronous radio network to the synchronous core network.

Regarding claims 21, 34, the step c) includes the steps of: c1) at the synchronous core network, transmitting a handoff request message to the target Synchronous radio network; c2) at the target Synchronous radio network, analyzing and storing information about the source asynchronous radio network and the asynchronous mobile station, based on the handoff request message; c3) at the target Synchronous radio network, assigning sources to the asynchronous mobile station, thereby connecting to the call of the asynchronous mobile station; c4) at the target Synchronous radio network, transmitting a null forward traffic channel frame to the asynchronous mobile station; c5) transmitting a handoff request acknowledgement message from the target Synchronous radio network to the synchronous core network, transmitting a handoff command message from the synchronous core network to the source asynchronous radio network, and transmitting an inter system handover request RRC message from the source asynchronous radio network to the asynchronous mobile station; c6) transmitting a message for informing that the

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mobile station is prepared for the handoff, from the asynchronous mobile station to the source asynchronous radio network; and c7) transmitting a handoff commenced message from the source asynchronous radio network to the synchronous core network.

Regarding claim 28, the step c) includes the steps of:

c1) at the synchronous core network, transmitting a handoff request message to the target asynchronous radio network;

c2) at the target asynchronous radio network, analyzing and storing information about the source synchronous radio network and the synchronous mobile station, base on the handoff request message;

c3) transmitting a handoff request acknowledgement message from the target asynchronous radio network to the synchronous core network, transmitting a handoff command message from the synchronous core network to the source synchronous radio network, and transmitting an extended handoff direction message or a general handoff direction message for requesting the handoff, from the source synchronous radio network to the synchronous mobile station;

c4) transmitting a message for informing that the mobile station is prepared for the handoff, from the synchronous mobile station to the source synchronous radio network; and

c5) transmitting a handoff commenced message from the source synchronous radio network to the synchronous core network.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure with respect to processing handoff and call in asynchronous communication system.

US Patent 6,108,550 to Wiorek et al.

US Patent 6,463,054 to Mazar et al.

US Publication 2002/0071480 to Marjelund et al.

US Patent 5,918,177 to Corriveau et al.

US Patent 5,850,391 to Essigmann

US Patent 5,936,948 to Sicher

US Patent 5,590,133 to Billstrom et al.

US Patent 5,729,536 to Doshi et al.

US Patent 6,134,433 to Joong et al.

US Patent 6,680,953 to Kim

US Patent 6,570,856 to Freeburg et al.

US Patent 6,519,456 to Antonio et al.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 703-305-5300.

The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 703-305-4798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit 2664
KDM


RICKY NGO
PRIMARY EXAMINER